Immersion, digital fiction, and the switchboard metaphor

ENSSLIN, Astrid, BELL, Alice <http://orcid.org/0000-0001-9737-4081>, SMITH, Jen, VAN DER BOM, Isabelle and SKAINS, Lyle

Immersion, Digital Fiction, and the Switchboard Metaphor

Astrid Ensslin (University of Alberta), Alice Bell (Sheffield Hallam University, UK), Jen Smith (Sheffield Hallam University, UK), Isabelle van der Bom (Sheffield Hallam University, UK, and Chemnitz University of Technology, Germany), and R. Lyle Skains (Bangor University, UK)

Abstract:

This paper re-evaluates existing theories of immersion and related concepts in the medium-specific context of digital-born fiction. In the context of our AHRC-funded "Reading Digital Fiction" project (2014-17) (Ref: AH/K004174/1), we carried out an empirical reader response study of One to One Development Trust's immersive three-dimensional (3D) digital fiction installation, *WALLPAPER* (2015). Working with reading groups in the Sheffield area (UK), we used methods of discourse analysis to examine readers' verbal responses to experiencing the installation, paying particular attention to how participants described experiences pertaining to different types of immersion explicitly and implicitly. We explain our findings by proposing the idea of a switchboard metaphor for immersive experiences, comprising layers and dynamic elements of convergence and divergence. Resulting from our analysis, we describe immersion as a complex, hybrid, and dynamic phenomenon. We flag the need for a more discriminating treatment of specific types of immersion in medium-specific contexts, including a distinction between literary and narrative immersion, and collaborative and social immersion (Thon 2008). We argue that literary immersion is needed as a separate immersive category because it differs from narrative immersion, and is far more linked to the activity of cognitive word processing. Similarly, we introduce collaborative immersion as an additional immersive category to reflect attention shifts towards site-specific, human interactions. Finally, our data shows the importance of site-, situation-, and person-specific constraints influencing reader-players' ongoing ability to establish and retain immersion in the storyworld.

Keywords: Digital fiction; immersion; medium-specific, cognitive, empirical reader response research; *WALLPAPER*

1. Introduction

In this article, we pursue an empirically grounded, cognitive poetic approach to immersion in immersive, 3D digital fiction by examining data from a medium-specific empirical reader-response study. Adopting a multi-pronged, cognitive theory of "psychological immersion as resulting from a shift of attention to and the construction of situation models of certain parts of the game" (Thon 2008: 33), such as narrative, ludic, spatial, and temporal elements (see also Ryan 2001, 2015), we assume that immersion is not a holistic or stable phenomenon but rather shifts in type and intensity throughout a reader-player's experience (Bell et al. 2018). Our data supports this view and suggests that additional immersive subtypes are required to do justice to medium-specific, ludo-literary experiences characteristic for immersive, 3D digital fictions (often misleadingly termed "walking simulators"). Our main argument in this article is, then, that reader response data helps us understand immersion as a medium-, site-, situation-, and person-specifically differentiated, hybrid, dynamic, con- and divergent phenomenon, with types, or levels, of immersion interacting and changing in relation to each other and to elements in and outside the text. To understand this phenomenon more holistically, we introduce the concept of the switchboard metaphor.

We profile our approach to immersion in digital fiction via its application to a case study: Andy Campbell and Judi Alston's 3D immersive fiction, *WALLPAPER* (One to One Development Trust 2015), which was exhibited as an interactive installation at Bank Street Arts Gallery, Sheffield (UK), in November 2015. We therefore include in our analysis of reader responses to digital fiction effects experienced in the site-specific context of an exhibited work, which allows us to gain insight into the specific immersive and/or anti-immersive elements of a public reading/playing experience.

The broader context of this study is the AHRC-funded "Reading Digital Fiction" project (2014-17) (Ref: AH/K004174/1), which aimed to develop new empirical literary methods

to examine reader engagement and interaction with digital fictions, to produce new readings of digital fictions against a cognitive narratological backdrop, and to open digital fiction to a broad public readership through exhibitions, installations, pop-up bookclubs and library workshops in England and Wales. This study combines all aspects of the project. The results reported in this article were derived from a reader-response study on *WALLPAPER* conducted as part of the project's public engagement activities. By following a cognitive, empirical account of immersion in digital fiction, we contribute to and expand the scope of reader response research in stylistics in which "rigorous and evidence-based approaches to the study of readers' interactions with and around texts … [and] the application of such datasets in the service of stylistic concerns … contribute to a stylistic textual analysis and/or wider discussion of stylistic theory and methods" (Whiteley and Canning 2017: 73).

2. Immersion and digital fiction

Immersion is a well-debated and sometimes contested term and is defined differently in relation to different media and thus different narrative experiences. Early investigations into immersion and related concepts such as "flow" (Csikszentmihalyi 1990) and "presence" (Lombard and Ditton 1997) tended to emerge from the fields of cognitive psychology and/or computer science. However, over the last two decades, the development of both cognitive and transmedial narratology/stylistics within the Humanities has resulted in an increased focus on examining readers' cognitive experience of texts as well as focussing on texts produced across a range of media. There has therefore been an increased focus on immersion from within those disciplinary contexts. While early theories of immersion across media tend to suggest that immersion is a completely absorbing experience and also that it is experienced consistently across media (e.g. Murray 1997), given the vast range of medial experiences now available to diverse audiences, research is now more sensitive to the medium-specific nature of immersion (see Thon 2008; Bell et al. 2018).

In this article, we explore immersion in digital fiction, which we define as fiction written for and read on a computer screen, that pursues its verbal, discursive, and/or conceptual complexity through the digital medium and would lose something of its aesthetic and semiotic function if it were removed from that medium (Bell et al. 2010). Digital fiction can be largely text-based (e.g. hypertext fiction) or utilize multimodal forms of storytelling (e.g. narrative videogames). In this study, we investigate immersion in the latter: digital fiction that utilizes the three-dimensional graphics of videogame technology to produce an avatar-based, explorable storyworld, with the aim of uncovering a story at the heart of gameplay.

Immersion in digital media – including videogames, virtual reality, and text-based digital fiction – has been of rising interest since the late 1990s and early 2000s, following the publication of seminal theoretical works such as Murray's (1997) *Hamlet on the Holodeck* and Ryan's (2001, 2015) *Narrative as Virtual Reality*. Both Murray and Ryan define immersion in terms of the metaphorical concept of "transportation" with, Murray conceptualizing it as the "experience of being transported to an elaborately simulated place" (1997: 98) and Ryan (2015) as a form of "fictional recentering" by which "consciousness relocates itself to another world…and reorganizes the entire universe of being around [it]" (73), ultimately involving a "[relocation of] consciousness itself to another world" (73).

While the metaphor of "reading-as-transportation" has some empirical basis (e.g. Gerrig 1993, Green et al. 2004), reliance on that metaphor has been seen as problematic (e.g. Ermi and Mäyrä 2005; Thon 2008, Calleja 2011). Thon (2008), for example, argues that no literal transportation of the reader or [computer game] player takes place whilst he/she is reading or playing. Instead, he "propose[s] to conceptualise the computer game player's experience of psychological immersion as resulting from a shift of attention to and the construction of situation models of certain parts of the game" (33). Thon's emphasis on a shift of attention is important because it accounts for the way that reader-players can lose a sense of reality as they read or play a text (cf. Grimshaw et al., 2011) and also the way in which their attention moves from one part of the storyworld to another.

Our own previous research (Bell et al. 2018) has confirmed empirically that it is not accurate to conceptualise immersion as a complete relocation to another world. Furthermore, we argued that it is necessary to see immersion in digital fiction in terms of a deictic and thus ontological shift, because the reader-player of a three-dimensional digital fiction is always embodied in a separate ontological domain in the form of an onscreen avatar. More specifically, reader-players are what Ensslin (2009) defines as "doubly-situated", "'embodied' as direct receivers, whose bodies interact with the hardware and software of a computer [and] … 're-embodied' through feedback which they experience in represented form, e.g. through visible or invisible avatars" (158).

Whilst various typologies of immersion and its "multidimensional" qualities (Thon 2008: 33) have been proposed, we primarily draw on those put forward by Ryan (2001) and Thon (2008). For Ryan, spatio-temporal immersion is "a sense of being present on the scene of the represented events" (Ryan 2001: 122) and this corresponds closely to Thon's spatial immersion: a "player's shift of attention … to game spaces" (Thon 2008: 35). Both Ryan's spatio-temporal and Thon's spatial immersion then relate to a reader-/player being spatio-temporally placed within the gameworld. For Thon, narrative immersion is the "shift of the player's attention to the future development of the story and the characters in it" (Thon 2008: 40) and corresponds closely to Ryan's categories of spatial, temporal, and emotional immersion which are a "response to setting" (Ryan 2015: 86), "that which keeps readers turning pages or spectators speculating about what will happen next" (Ryan 2015: 100), and "subjective reactions to characters and judgements of their behaviour ..., emotions felt for others …, emotions felt for oneself" (Ryan 2015: 108) respectively. So, here we see how narrative elements in a story world or gameworld can contribute to a player being immersed in that world.

While narrative and spatio-temporal immersion are components of immersion across narrative arts and media, Ryan and Thon also pay attention to an important medium-specific component of videogames, which is ludic immersion. For Thon, ludic immersion is "a shift of the player's attention to the interaction with the game and … the possibilities for action within it" (Thon 2008: 36) and for Ryan "deep absorption in the performance of a task" (Ryan 2015: 246). So, if interactivity is absorbing, it can help to immerse a reader-

/player within the digital storyworld. Thon also adds social immersion to his typology, which encapsulates a player's shift of attention to other players as social actors in a multi-player online game, the relationship between them, and the construction of a situated social space that is constituted through the communication and social interaction between players specifically (Thon 2008: 39). While social immersion as Thon defines it is irrelevant to the single-player context of *WALLPAPER*, we revisit this concept in our analysis to juxtapose it with a different form of human interaction: that between extradiegetic collaborators in the physical space surrounding the player.

3. Immersion: a cognitive, empirical approach

Ryan and Thon's theories of immersion can be used as a basis for categorising different kinds of immersion in digital media. However, while they demonstrate how immersion works by applying their categories to texts, they do not provide a systematic method for analysing immersion. Thon does show "what elements of computer games lead to which kinds of immersion" (Thon 2008: 33), but he focuses on common elements as opposed to presenting an analysis of specific features in a particular game. In Ryan's approach, she considers both "the mental operations and textual features responsible for immersion" (Ryan 2015: 85) and provides an analysis of some of the linguistic and narratological features responsible for some different kinds of immersion in a range of examples. However, neither Thon nor Ryan offer a comprehensive framework with which to analyse immersion as a multidimensional experience in a particular text. Moreover, working within a purely theoretical context, neither Ryan nor Thon base their categories on empirical research, beyond evidence from their own experiences.

The research reported here, however, is based on a reader response study developed specifically to investigate immersion in digital fiction. Most existing empirical studies on immersion focus on print media or film and use quantitative methods to measure the extent to which people feel transported to a storyworld and/or absorbed in a narrative (e.g. Green and Brock's [2000] transportation scale; Busselle and Bilandzic [2009] narrative engagement scale; Kuijpers et al.'s [2014] story world absorption scale). Within the

context of digital media, research on immersion is also largely quantitative and/or a stimulus text is developed for the experiment, rather than a naturally occurring text being used (see Cairns et al. 2014 for an overview). Poels et al. (2007) use a focus group methodology to investigate players' experiences of immersion in videogames and thus adopt a qualitative approach. However, their protocol asked participants about their experiences of gaming in general as opposed to asking them to talk about a particular text.

In our empirical research, we are interested in how readers conceptualise immersion in naturally occurring texts – that is texts that have not been created purely for empirical research. We thus take a qualitative approach to a particular case study text by analysing the language that reader-players use to talk about that experience. *WALLPAPER* is a first-person 3D digital fiction, made in Unity, that tells a story about protagonist PJ Sanders, a computer engineer at a company called Poppitech. Sanders returns to his remote family home in the UK following the death of his elderly mother. To find out more about his elusive past, reader-players adopt Sanders' first-person perspective (as an avatar) and explore the house and its surroundings. The aim of the ludic part of the experience is to find a key to open the parlour room that has remained locked since Sanders' childhood. However, the experience is mostly made up of spatial exploration of the storyworld and reader-players come across various visual and textual objects in the house (e.g. postcards, letters, notes, floating circles of text), which reveal information about Sanders and his family.

Reader-players who find the key to the parlour deploy a prototype of a "Visual Memory Extractor (VME)" that Sanders has been working on for Poppitech. This machine projects a film onto the walls of the parlour room and reveals that Sanders had a twin sister who died when a small child and his mother's sadness is thus explained by the grief she felt but had always hidden from her son. It is at this point that the narrative relevance of the metaphoric title – *WALLPAPER* – is fully realised. Like layers of physical wallpaper, family memories are peeled back in the house until the original layer of the story is discovered. The title thus evokes concepts of dishonesty wrapped by projections of domestic cleanliness and integrity, but it also evokes palimpsestic readings of layered multimodal projections of voices of the past, of the here and beyond.

WALLPAPER was launched as an installation at Bank Street Arts in Sheffield, England, in November 2015. During the exhibition, the work was projected onto a large screen inside a dark, enclosed purpose-built room within the gallery. The reader-player sat opposite the screen and used a mouse and keyboard to navigate the storyworld. Depending on the number of visitors in the gallery, reader-players might be joined in the room by others. However, the interface allowed only one person to operate the computer, and therefore only one person was responsible for navigation and the first-person perspective of Sanders. Often, videogames are played in a private setting, most obviously in people's homes. However, interactive digital media is increasingly accessed in public spaces, such as temporary and permanent exhibitions, and also in the form of eSports. The research reported in this article thus addresses the changing nature of media consumption in the digital age and allows us to consider the contextual factors – such as a site-specific location – that potentially influence immersion in a public space.

Four reading groups (14 participants in total) took part in our reader-response study; three were established reading groups who had been meeting since 2008, 2011, and 2014 and one "pop-up" reading group which was set up as part of the Reading Digital Fiction project specifically. Following Peplow et al. (2015) we regard reading groups as "providing insights into readers' activity" (3), while also recognising that "participants' reports cannot be regarded as direct reflections of their mental process as they read" (Whiteley 2011: 33). We thus offer suggestions for how language use might reflect immersive experiences, while also recognizing the limitations of any empirical study that seeks to investigate cognitive processing.

In terms of our protocol, we asked all participants to experience *WALLPAPER* at the gallery individually and subsequently meet in their reading groups to discuss it. The participants had varying levels of experience with videogaming and with digital reading. Mixed age and gender groups were chosen for the study in order to gain access to a range of different perspectives on *WALLPAPER*. Moreover, because *WALLPAPER* combines straightforward gameplay and reading, participants did not necessarily need to have experience of videogaming. As it happens, none of the participants – although some of them were used to discussing audiovisual narrative media such as film in their reading

group - had read much if any digital fiction before, so this was a new experience for most of them, and it allowed them to describe their immersive experiences without having to fall back on extensive comparisons with other digital fictions We aimed to maximize the "naturalistic" (Allington and Swann 2009) nature of the study by allowing "readers to interact freely" (Peplow et al. 2015: 6) and thus offering "greater ecological validity" (Peplow et al. 2015: 6). However, because we aimed to "generat[e] hypotheses based on informants' insights" (Flick 2009: 203) on a particular topic, we also introduced a level of experimental intervention. More specifically, a researcher was present at each group and she guided the discussion according to a semi-structured protocol.

Participants were told that the researchers were interested in immersion in *WALLPAPER* but that they could talk about whatever interested them about the experience. The researcher had a set of topics and associated questions for discussion, but adopting a semi-structured approach meant that the researcher was also "free to allow for unplanned talk" (van Peer et al. 2012: 82; for an equally valid alternative method allowing participants to talk unsupervised for some time before the researcher arrives to establish their key topics, see Pope 2010 and 2017) and thus the conversation could expand beyond our initial research interests. To lessen any influence that the presence of the researcher might have had over participants' behaviour and their talk, the researcher met with the reading groups before the data collection to introduce themselves and get to know each other. Despite deploying this method, as the Hawthorne effect suggests, inevitably the readers would have undoubtedly been influenced by the presence of the researcher at the discussion group. It should be noted, however, that even the mere presence of a small recording device may still raise awareness that participants are being recorded and thus impact upon the interaction. The Observer's Paradox (Labov 1972) can never be fully dissolved and the researcher's presence in the research process -- whether present at the recording or not -- can never be entirely eliminated. We define our approach as 'semi-naturalistic'; it allowed us to collect data on a specific topic while bearing in mind the limitations of a researcher-led session.

All sessions were audio-recorded, transcribed and subsequently coded using NVivo. We focussed on identifying evidence of the following different kinds of immersion by using

existing typologies from stylistics, narratology, and game studies which also focus on narrative experiences in games: "spatial immersion" (Thon 2008, Ryan 2015); "temporal immersion" (Ryan 2015); "spatio-temporal immersion" (Ryan 2015: 93); "emotional immersion" (Ryan 2015: 106); "ludic immersion" (Ermi and Mäyrä 2005; Thon 2008; Ryan 2015); "perceptual-environmental immersion" (Lombard and Ditton 1997); and "social immersion" (Thon 2008: 39). To these categories, we also introduced two new ones – 'extratextual immersion' (see Bell et al. 2018) and 'collaborative immersion' (see section 4.2) – to account for the way that various modes and also co-players in the actual world respectively can contribute to immersion in the storyworld. In the course of our analysis, as we explain below, we learnt that further categories are needed to account for the highly medium-specific immersive experiences characteristic of reading-playing literary, 3D digital fictions.

When analyzing the data, we paid attention to both explicit language use about immersive experiences, and implicit linguistic cues in reader responses that indicate a perceived relationship to elements of the storyworld and thus evidence of an immersive experience. Our approach allowed us to empirically verify some existing categories of immersion and also generate new empirically verified insight into how immersion works cognitively.

4. Analysis

This study builds on the results reported in Bell et al. (2018), which corroborate, via an analysis of pronominal self-representation, that reader-players feel doubly-embodied, or simultaneously positioned inside and outside *WALLPAPER*'s storyworld by responding to a combination of textual, audible, visual, interactive, and site-specific features. In that publication, our research suggests that a reader-player's relationship with their onscreen avatar is dynamic and changes throughout the interaction, from a strongly felt perceptual relationship (i.e. emotionally identifying with the character) to spatio-temporal affinity (i.e. feeling part of the space and time of the world) and/or simply a referential relationship (i.e. knowing that we are embodied in the storyworld by an avatar, but not necessarily experiencing a spatio-temporal or perceptual deictic shift). Our results

supported a distinction between narrative and ludic immersion yet also indicated that spatio-temporal immersion - at least in *WALLPAPER*'s medium-specific 3D audiovisual game world - must inevitably be a more stable category than the other two. We further suggested a strong conceptual and terminological link to deictic shift theory ("DST;" Segal 1995; Stockwell 2002) as explanatory theoretical framework, which starts from the idea of the reader's deictic centre (origo) shifting in and out of the storyworld and its embedded layers. An immersive shift into the storyworld is called a deictic "push," and a deictic shift out of the storyworld or one of its embedded layers is called a "pop." In our previous research we added key multimodal and ludic features to DST to account for the medium-specific immersive experience of 3D digital fictions like *WALLPAPER*. Our findings strongly suggested that individual elements in the text lead to (temporary or more permanent) pushes or pops into and out of specific types of immersion, which further supports a multi-layered, dynamic model of immersion.

In what follows, we shall complement the findings reported in Bell et al. (2018) by focusing, in particular, on the ways in which certain, previously un- or under-documented types of medium-specific immersion manifest themselves in our reader-response data. We look at shifts between literary and ludic immersion, where we introduce literary immersion as a new immersive category that is distinct from narrative immersion. We then introduce cooperative immersion as a complementary category to social immersion, where cooperative immersion results from the site-specific context of the textual experience. Finally, we document further site-, situation- and person-specific features that caused anti-immersive "pops" (Stockwell 2002) in participants, thus underlining the importance of considering situative, extratextual elements of the reader-player's world and personality during an immersive experience (see also Calleja 2011). We would like to emphasize that any views reflected by participant data reproduced in this article are those of the participants' solely and do not represent those of the authors.

4.1 Literary vs. narrative vs. ludic immersion

Ludic immersion is a key element of interactive media experiences and closely linked to feelings of flow (Csikszentmihalyi 1990) as well as to spatial immersion. Narrative

immersion, on the other hand, relates to the temporally oriented curiosity and suspense felt by reader-players in relation to the (pending) events of the storyworld, as well as feelings of empathy towards the player-character and/or other characters in the storyworld (see also Ryan's [2015] concept of emotional immersion).

While, as our data analysis (Bell et al. 2018) has confirmed, both categories are accounted for in our reader response data, they do not account for the kind of deep attention (Hayles 2007) required to close-read the numerous textual objects (letters, prayer cards, postcards, floating and animated text etc.) the reader-player has to interact and engage with in *WALLPAPER.* We would refer to the kind of attention required to close-read these symbolically rather than iconically encoded objects, and to build situation models of their content, as literary immersion. As suggested by previous research on combining narrative reading and interactive gameplay, the latter can distract readers from following the story (Takacs et al. 2015). Similarly, as our participant Tom's following remark suggests, ludic immersion in the sense of attention to interactive elements of the game (here: the parlor key) can easily override the kind of literary immersion needed to process complex textual material in the game world:

> You know, trotting up and down the same rooms over and over again, and I got completely like target-fixated on find[ing] the key, and there was various words in the background and thoughts- I had no interest in them at all, 'cause I was just trying to find- uh, after half an hour, I hadn't found the key, I was like I've had enough of this kinda thing.
>
> (WALLPAPER BSAB, lines 31-33)

Indeed, he dismisses key narrative elements (floating text, postcards, letters etc.) whose function it is to provide information about individual characters and their histories as "various words in the background and thoughts." This is indicative of the phenomenological distinctness of both ludic and literary immersion and necessitates a separate category for the latter that is distinct from narrative immersion.

In the following excerpt from the transcript, Tom's discourse offers further evidence of the phenomenological difference between ludic and literary immersion, which can be

experienced as mutually exclusive or impeding. Interestingly, he refers to this cognitive clash between "different part[s] of [his] brain" as a dichotomy between "driving" on the one hand and "engaging" and "thinking" on the other, which he considers comparable to the experiential difference between "cooking" and "playing football":

TOM: Yeah, I think that's- the effort to drive and engage- yeah, was a bit too much .... That's what- really, I think- 'cause yeah, I can't drive and think at the same time.

{...}

RESEARCHER (R): And that it's the interacting with the objects

TOM: Uhuh

R: Like, it's the objects in the fiction rather than the physical- the mouse and the keyboard that are //in the way, so

TOM: //Yeah

LOUISE: //Mm

R: There- //there is an extra level, yeah- yeah that's really hard, yeah

TOM: //Most of those levels- especially, that felt like a completely different part of my brain entirely to when I'm reading fiction, it felt like a completely different thing

LOUISE: Mm, yeah

TOM: Like- like cooking as opposed to playing football, cooking is a different thing, so yeah

{...}

LOUISE: Yeah

TOM: So not like two different sports, but two different endeavours entirely

LOUISE: More of a barrier to enjoying it than actually helping you to

TOM: I think so, or if I was gonna drive I would have to go into a completely different mind-set, like how fast can I get round this

LOUISE: Yeah

TOM: Can I beat last time?

{...}

Which is what video games tend to be a bit like, I think

(WALLPAPER BSA-B, lines 711-745)

Tom describes his ludic mindset in terms of ambition regarding speed ("how fast can I get round this") and self-competition ("Can I beat last time?"), which are processed and executed in "a completely different mind-set," compared to "reading fiction." As Louise's comment ("More of a barrier to enjoying it…") seems to suggest, the competitive, action- and speed-centered cognitive mechanisms associated with his ludic immersion are qualitatively counter-intuitive and prohibitive vis-a-vis the kind of deep attention that Hayles (2007) attributes to contemplative reading, listening and/or viewing activities, or what we would describe, in relation to textual objects in digital fiction, as literary immersion. Literary immersion, then, is what Tom describes, in what follows, as qualitatively different from ludically "gorging down the words … so you could get to the end." Instead, he frames literary immersion in terms of the freedom and solace to "interact with" and appreciate ("love") textual elements in a highly individualized fashion:

[C]oming out of it [the experience of *WALLPAPER*], this made me really think about what reading is when you're doing it, 'cause it's more than just you're gorging down the words that they give you so you could get to the end- it's more like- reading's more like looking at a picture, you can interact with it, just like when you look at a work of art and you're free to go I love that and I love that, but then what's this going on, what is that- it's not like a picture and it's not like reading, it's definitely like we're gonna walk you through this process.

(WALLPAPER BSA-B, lines 896-901)

Contrasting the potential of ludic immersion to overrule literary immersion, several of our participants noted the immersive qualities of close-reading textual objects in the 3D environment of *WALLPAPER*. Eleanor, for example, uses the conduit metaphor of "bringing her in[to] the storyworld" to describe the immersive, enigmatic quality of the letters in PJ's mother's bedroom:

> ELEANOR: I went upstairs and I went to the bedroom and I read the letters on the bed
>
> {...} that was starting to bring me in 'cause there was a mystery there.
>
> (WALLPAPER BSA-A, lines 202-205)

Her formulation thus suggests that literary immersion in the sense of shifting attention to close-reading verbal-narrative information for her had the phenomenological effect of feeling holistically "transported" (Gerrig 1993) into the storyworld.

Different text genres and objects, however, seemed to exert different literary-immersive effects on different readers. As the following short dialogue shows, the letters seemed to yield greater narrative substance than the prayer cards, and were felt to be of less empathetic use to Eleanor than to Abi, who connects them to PJ's mother's grief:

> ELEANOR: Were there- was there something- I mean the letters gave you story, they moved you forward in the mystery, um but the prayer cards, did they mean something, they didn't seem to add //to my understanding
>
> R: //Well they were just kind of
>
> ABI: Little solace, weren't they, she [PJ's mother] took- knowing now, what I know, she took refuge in religion to cope with the loss.
>
> (WALLPAPER BSA-A, lines 1070-1075)

Despite occasional evidence of literary immersion, however, throughout our dataset, we observed a tendency towards ludic immersion more easily overruling literary immersion than vice versa, especially in co-experienced reading sessions. We will elaborate on this in section 4.3.

An important element of literary immersion in our participants seemed to be the visual-aesthetic qualities of written text in *WALLPAPER.* As exemplified by the following dialogue between Abi and Ivor, these qualities affected their sensory immersion (Ermi and Mäyrä 2005) through visually stimulating, "evocative" interface design and animation:

> ABI: I just thought it [the written text] looked beautiful um and the- the lines that were written were interesting, they were quite evocative and that- that's enough for me actually, capturing um enough about a piece of fiction, that it was evocative around loss and death and grief and the mystery
>
> IVOR: I did like the aesthetic of it [the interface], that really drew me in, and I found it quite easy to place myself in that space
>
> {...}
>
> And engage with it, um in my imagination that way, um- yeah I mean sort of- written text I thought was well done, um you know, the font that was used and everything that went with it- it- it wasn't- it wasn't intrusive, it worked visually in the environment.
>
> (WALLPAPER BSA-A, lines 17-31)

Some participants felt the textual elements, and especially the floating rings, were "like … beams of sunlight" and "the bit I liked best" (Eleanor, WALLPAPER BSA-A, lines 810; 33), and although Brendan, for example, perceived them as "very hard to read," he nonetheless admitted that "you could catch glimpses of words. And even- even apart from the semantic meaning of each one, they just- they just looked beautiful floating there, spinning in space" (Brendan, WALLPAPER BSA-A, lines 36; 40-42).

Other participants, however, felt that the laggy navigation controls prevented any kind of literary immersion in terms of harming the expected content-form consistency:

> ELEANOR: And there's obviously a mystery, 'cause it's like, ooh, this looks like it's about me, and there's the one that was scribbled on, she's hiding the- and then there's some stuff about oh Dad, why did you leave your son when he was four

years old, I didn't particularly engage with it, I really needed to get more into the book- into the story

R: Yeah

BRENDAN: But- but the interface was blocking that, because they are, they're t- parts of a whole

ELEANOR: //Yeah

BRENDAN: //In this, the interface and the story are supposed to be joined together and since y- one of them was not working out for you

{...}

BRENDAN: Then the other one was also not gonna work out for you

(WALLPAPER BSA-A, lines 640-649)

Yet others noted an imbalance between the filmic and the literary qualities of the narrative, which seemed to impede literary immersion:

TOM: I thought the video bit was much better done than the fiction bit, I mean it felt like these are video gamers who tried to write a little plot around it, you know what I mean

LOUISE: Mm

TOM: Rather than an author who's got together with a software developer, 'cause I think I flicked through the postcard and the odd letter and it didn't grab me at all, I thought this- I didn't think- looking back it felt quite clunky, whereas the video thing, I thought oh this is quite good, you know, you hear him sniffing and stuff, you think //that's quite cool

(WALLPAPER BSA-B, lines 518-524)

This comment seems to reflect the distinctly medium-specific needs of readers in immersive digital fiction, who are confronted with competing literacy requirements that easily prioritize audio-visual, pictographic, cinematographic, and ludic elements over

literary-textual elements. Interestingly, Tom's first comment stands in polar opposition to One to One Trust's intent of taking fiction writing as a starting point, and blending it with elements of gaming environments and film, without, however, separating those roles as a creative team. We shall return to anti-immersive features in section 4.3, where we address site-specific issues relating to the installation itself.

4.2 Collaborative immersion

Social immersion, according to Thon (2008), relates in particular to the social effects created through multi-player interaction in so-called Massively Multiplayer Online Role-Playing Games (MMORPGs) and can be described as a "shift of attention to the other players as social actors and the relationship between them, and the construction of a situation model of the social space that is constituted through the communication and social interaction between the players" (39). What this concept does not entail is the kind of interaction and concomitant intersubjective immersion resulting from co-experienced, physical spaces within which a digital narrative is set - such as the installation space of the *WALLPAPER* exhibit. To account for readers' shifts of attention to other individuals in a shared physical space surrounding the digital fiction experience, and the construction of a situation model of that shared, perceptually social space, we introduce the term "collaborative immersion."

The black box within which *WALLPAPER* was set up in Bank Street Arts gallery could hold up to ten people, and visitors would regularly co-experience the digital fiction, either by playing and being observed by others while doing so, or vice versa. This afforded various types of interactions between users and observers, and led to a variety of positively and negatively connoted perceptions and behaviors instantiating aspects of collaborative immersion. In the following passage, Anna's talk about how being exposed to other users' conversation about ludic elements in *WALLPAPER* allowed her to think strategically about her own gameplay, thus making a phenomenological difference:

> ANNA: Ah well see I did know there was going to be a percentage because I heard you talking when I came in

{...}

Now obviously that- that made me //think about what I was doing in a different way

{...}

R: Right, does it, does it?

ANNA: It made a difference.

(WALLPAPER BSA-PopUp, lines 810-816)

The flip side of co-experiencing screen-based media with only one set of controls is of course, (perceived) competition, which can result in a loss of confidence vis-a-vis feelings of inferiority towards other people in the room. Renee describes her experience of having to surrender the controls due to navigational difficulties thus:

RENEE: //I mean, I didn't get to do much in navigation, I started off doing it, because I wasn't on my own, I soon got the mouse taken off me 'cause I was bumping into things.

(WALLPAPER BSA-B, lines 164-165)

A little later in the discussion, Renee specifies that she was actually with a friend, whose immersive needs seemed radically different from hers, thus mapping the above-mentioned clash between literary and ludic immersion onto two co-situated participants:

RENEE: Yeah, I think definitely, 'cause like I was obviously here with a male friend

TOM: Mm

RENEE: And he seemed to be like what you're saying, like- he's like, oh there's a photo, there's a postcard, right, pick it up, put it down, and I was like- you know, I was //like

TOM: //Hm

RENEE: I was like- he was like just putting it back down again, I was like, no, I want to read that, //and he would just

TOM: //Mm, mm

LOUISE: //Mm

RENEE: Like, kept going on and on

(WALLPAPER BSA-B, lines 1523-1533)

The approving interjections uttered by Tom and Louise seem to confirm that they can relate to Renee's experience of wanting to immerse herself into deep attention and literary reading, whilst her "male friend" overrode her with his ludic immersion and completionist need to use the literary objects simply as instruments for quick interaction.

Interestingly, a participant from another reading group noted that collaboration between different visitors could also lead to skill-based task assignment, thus facilitating literary immersion for the non-playing collaborator:

NORA: And I was really struggling with driving so I gave it to someone else, and once- and he was driving it like a bit faster

R: Okay

NORA: So once he was doing that, it was a bit easier to actually look at the story

…

R: So was- how was it to watch someone else make choices?

NORA: Um, it was fine (…) someone else, uh, it was- I'm here

{...}

With him like finding where the key was, and I could take in the story a little bit more

(WALLPAPER BSA-B, lines 195-207)

Thus, our data – albeit limited in scope – suggests that the cognitive dissonance between literary and ludic immersion does not necessarily have to lead to exclusionary mechanisms and missed opportunities. Transforming collaborative immersion into an actual collaborative strategy, at least in a gallery and/or installation context, can indeed enhance literary and ludic immersion and appreciation amongst cooperating player-readers.

4.3 Site-, situation-, and person-specific immersion

Finally, we would like to focus on an important aspect of immersion that is often neglected or empirically sidelined by existing research: the key role of site-, situation-, and person-specific immersive perceptions and experiences. Previous research has emphasized the immersive effects of playing in darkened rooms, especially for horror games (e.g. Ilgner et al. 2013). Similarly, as Louise explains in the following passage, the darkness of the surrounding physical environment suitably matched the darkness of the gameworld, which "make[s] you feel more a part of it," thus enhancing spatio-temporal and probably also temporal and emotional immersion:

> LOUISE: I think the //setting made a big difference
>
> TOM: //Mm, mm
>
> R: So what was it about the setting that (3) hm
>
> LOUISE: Well, I think the fact it's set at night, it's dark //within the scene
>
> {...}
>
> LOUISE: And it's also dark where you are, does kind of make you feel more of a part of it, I think
>
> R: Hm

TOM: And it is- it is like you said, that kind of building, isn't, it, it's not //one of them

LOUISE: //Mm, mm

TOM: I dunno and (…) there was a young guy when I came in who was kind of on the door, and he was incredibly kind of pierced and (whoosh sound) kinda (whoosh sound), I think the whole experience (hahaha)

R: (hahahahaha)

TOM: It's slight- oh it's a bit unsettling.

(WALLPAPER BSA-B, lines 422-436)

Interestingly, the situation- rather than simply site-specific experience of seeing the pierced "young guy" entering the installation space augmented Tom's feelings of horror and, arguably, his temporal immersion vis-a-vis eerie things awaiting him further on in the experience as a whole. One could also argue that these extratextual effects might not work in the same way with other player-readers, such as the researcher (R), who interjects an episode of hearty laughter.

As mentioned by Mark in the following passage, the fact that the game world matched the broader geographic environment of autumnal, "foggy" North Yorkshire, known for its eerie moors and gothic fictions emerging from it, such as Emily Bronte's *Wuthering Heights*, helped increase feelings of spatio-temporal and temporal immersion.

MARK: I really uh- I- I liked it a lot visually, I liked the fact that it was in this kind of twilight, uh and it was meant to be in North Yorkshire

{...}

It was a bit foggy because actually, you know, here, at some point in the next three months, there'll be about a four to six week period when you won't genuinely, really see the sun //for that amount of time.

(WALLPAPER BSA-C, lines 2073-2078)

Mark highlights that these realistic effects are heightened by the contrasts created by the narrative surrounding PJ Sanders, who has travelled from the eternal sunshine of Silicon Valley to literally dig into the mysterious morass of his past.

Finally, an element of negative immersion that could easily be brushed under the carpet but that we consider important in the debate surrounding site-specificity is the physical set-up of the hardware. Several participants noted that the specific constellation of the installation reduced their ability to fully immerse themselves, due to the "uncomfortable seat" (Abi, WALLPAPER BSA-A, line 14), the table in front of them that was perceived as "a bit too low" (Abi, WALLPAPER BSA-A, line 16), making it impossible to "get your knees underneath or anything" (Eleanor, WALLPAPER BSA-A, line 419), and the use of "keyboard and mouse" that were perceived as "horrible" (Brendan, WALLPAPER BSA-A, line 418). Eleanor reported that the unwieldy set-up forced her to sit "on the floor for a bit 'cause I have trouble with my neck" (Eleanor, WALLPAPER BSA-A, lines 421-422). Brendan mentioned having to sit "side-saddled … like in the- in the gap on the floor" Brendan, WALLPAPER BSA-A, line 423-424), and Eleanor "wondered if it was deliberate, the uncomfortable [experience]"(Eleanor, WALLPAPER BSA-A, line 433).

5. Discussion and conclusion

That immersion is not a monolithic, static experience has been noted by a variety of researchers in the past, focusing on various types of fictional media including videogames (e.g. Ryan 2001, 2015; Thon 2008; Calleja 2011). Various typologies of immersion and related concepts have been proposed, and important observations have been made for example of partial permeability between categorical boundaries and the cross-pollination of specific types of immersion, such as ludic and spatial immersion (Thon 2008). However, there is a lack of work using empirical, cognitive methods systematically to tease out in more detail how users of medium-specific, and digital-born fictions in particular, perceive these individual layers and the ways in which they intersect, depend on each other and potentially override one another. The research reported here and in Bell et al. (2018) makes a key contribution to filling this gap.

To arrive at a more holistic albeit potentially reductionist understanding of immersion, thus conceived, we would frame its multidimensional, dynamic, con- and divergent, mutually responsive and partly competing qualities in terms of a switchboard metaphor, best understood in the sense of a mixing desk, that allows different and fluid degrees of (co-)activation and layering. Importantly, the switchboard metaphor reflects the ways in which different types and degrees of attention take turns from another in response to textual cues and interactive experiences and can be activated to varying degrees, depending on the subject- and site-specific circumstances of reading and play. Furthermore, the metaphor captures elements of immersive permanence versus immersive changes, as we have seen for example in the case of stable spatio-temporal immersion vis-à-vis "switches" between narrative and ludic immersion (Bell et al. 2018). A problem with this term is, of course, that switchboard operation tends to be under the full, "top-down" control of its user (Yantis 1998). Conversely, immersion in digital fiction combines what Posner (1980) refers to as exogenous (reflexive, bottom-up, and responsive to external stimuli and thus involuntary) and endogenous (central, top-down, self-directed) "control of orienting" (19; see also Thon 2008: 32). That said, the metaphor conveniently captures most of the theoretical contributions our research has made to the concept of psychological immersion.

Building on the findings of Bell et al. (2018), this article has focused more closely on how participants in our reading groups described the clash between attention directed to goal-directed, efficiency-oriented ludic interaction (ludic immersion) and the need to pay close and often critical attention to reading written materials in the game world with the aim to gain a deeper understanding of the narrative context within which the story is set. We have introduced the latter as a new immersive category and named it "literary immersion," aligning it closely with Hayles' (2007) well established concept of deep attention (experienced while close-reading a book or observing a painting), as well as Nell's idea of print-readerly "trance" and his concepts of varying states of attentiveness while reading a book "for pleasure" (1988). We observed the importance of using literary immersion to demarcate the reading of linguistic symbols for literary and aesthetic effect and close-reading from both narrative immersion, which tends to be more macrostructural in nature, and from ludic immersion in particular, which often dominates and overrides other

semiotic processes in 3D gaming environments. That said, we concede that, literary immersion itself is not a new concept. It simply has not been flagged as a distinctive type of immersion in existing research on medium-specific narratives.

We further noted that literary immersion is a multifaceted experience, described by participants in terms of "engaging," "thinking," and "appreciating" that happens in an entirely different cognitive mode from and in greater solace than "driving" the avatar of a videogame. That said, the inclination to prioritize either literary or ludic immersion for the feeling of being transported into or being present in the storyworld tends to vary greatly between individuals and must therefore be seen as a highly person-specific element of immersion that is in need of further research. Our data also allowed an insight into the specific visual-aesthetic qualities of literary immersion, which can enhance sensory immersion, as in the case of readers being captivated by floating text circles and other types of visual literary art.

A second category we added to existing typologies of immersion and which reflects the importance of site-specificity in immersive media experiences is "collaborative immersion." It is distinct from Thon's (2008) social immersion in that it pertains to attention directed to social actors inhabiting the same physical space at the time the media interaction takes place. As in the case of literary immersion, our participants reported varying effects of being aware of or being influenced cognitively and behaviorally by other people being present in the installation space. These experiences ranged from improved strategic thinking about one's own ludonarrative performance, to lowered confidence levels or even surrendering the game controls to co-present individuals that were felt to be more effective players. This sheds light on co-presence as a key situative factor in co-creating a degree of entertainment that all participants in a shared physical environment can enjoy. Individual perceptions as to what constitutes ideal levels of entertainment and shared experiences are thus linked to the face-saving and image management needs of individual participants.

We showed how greatly these needs can differ between co-experiencing individuals, and that one individual's ludic completionism can easily overrule another participant's need for literary immersion. However, that these two immersive preferences might just as well

go hand in hand in truly collaborative interactive experiences was shown by participants reporting on being able to focus on the story better after handing the controls to a more ludically immersed co-reader.

Finally, we noted the importance of combining site-specificity with situation- and person-specific immersive experiences. For one of our participants, the site-specific gothic effects of the darkened installation room were augmented by the subjective experience of seeing an "incredibly … pierced" person entering the room - an effect that may not have been evoked in readers with greater previous exposure or less visual sensitivity to body piercings. Another important immersive factor that was noted by our participants was the matching real-world and fictional-world settings, and the awareness of being physically close to the famed Yorkshire Moors that have inspired gothic fiction writers in the past. Lastly, a factor that is often underrated but was flagged multiple times in our data is the site-specific constellation of the hardware. The furniture used in the installation did not always seem to be conducive to easy immersion - spatial, temporal, or otherwise, as the seating and table arrangement caused some participants to re-focus their attention to negative, extratextual influences on their bodily comfort levels.

The insights gained in this cognitive-empirical reader-response study contribute to a far more nuanced understanding of medium-specific immersion and its numerous interfering layers than previous studies have offered. We are acutely aware of the statistical limitations of the findings afforded by our exclusively qualitative research framework. Our results cannot be generalized beyond our participant population. This necessitates further research into larger and more diverse demographic samples, which also takes into account how participant media usage, as well as socio-economic, gender, and ethnic backgrounds may shape their medium-specific immersive experiences.

That said, our research has demonstrated how discourse analytical approaches to dialogic reading group responses can yield substantive insights into perceptions of immersion and how they are expressed verbally. This is particularly significant for the medium- and site-specific context within which our focal primary text was set, which was materially distinct from situations where for example a codex book can be brought into and cited directly in a joined reading group session. Further research will be needed into how public installation

and exhibition contexts might evoke further nuances of immersion, especially at a time when virtual reality entertainment and education have become a mainstream phenomenon.

Acknowledgements

This work was supported by the Arts and Humanities Research Council [funding reference: AH/K004174/1] as part of the Reading Digital Fiction project (www.readingdigitalfiction.com). Generous grants from the Arts Council England and Sheffield Hallam University funded One to One Development Trust to deliver the *WALLPAPER* project. Finally, we would like to thank Judi Alston and Andy Campbell for their comments on an earlier draft of this paper.

References

Allington, D. and Swann, J., 'Researching Literary Reading as Social Practice', *Language and Literature* 18, 3, 2009, pp. 219-230.

Bell, A., Ensslin, A., Ciccoricco, D., Rustad, H. K., Laccetti, J. and Pressman, J. (2010) 'A [S]creed for Digital Fiction', *Electronic Book Review* [WWW document] URL http://www.electronicbookreview.com/thread/electropoetics/DFINative [visited 06/13/18].

Bell, A., Ensslin, A., van der Bom, I. and Smith, J. (2018) 'Immersion in Digital Fiction: a Cognitive, Empirical Approach', *International Journal of Literary Linguistics* 7(1) [WWW document] URL http://www.ijll.uni-mainz.de/index.php/ijll/article/view/105.

Busselle, R. and Bilandzic, H., 'Measuring Narrative Engagement', *Media Psychology* 12, 4, 2009, pp. 321-347.

Cairns, P., Cox, A., and Nordin, I. A., 'Immersion in Digital Games. Review of Gaming Experience Research', In M. C. Angelides and H. Agius (eds.), *Handbook of Digital Games*, Hoboken, NJ: John Wiley & Sons, 2014, pp. 337–361.

Calleja, G., *In-Game. From Immersion to Incorporation*. Cambridge, MA: MIT Press, 2011.

Csikszentmihalyi, M., *Flow. The Psychology of Optimal Experience*. New York: Harper and Row, 1990.

Ensslin, A., 'Respiratory Narrative. Multimodality and Cybernetic Corporeality in "Physio-cybertext"', In R. Page (ed.), *New Perspectives on Narrative and Multimodality*, London: Routledge, 2009, pp. 155-65.

Ermi, L. and Mäyrä, F. (2005) 'Fundamental Components of the Gameplay Experience: Analysing Immersion', In *Proceedings of Digra 2005: Changing Views – Worlds in Play*. https://www.researchgate.net/publication/221217389_Fundamental_Components_of_the_Gameplay_Experience_Analysing_Immersion.

Flick, U., *An Introduction to Qualitative Research*. 4th ed. London: Sage, 2009.

Gerrig, R., *Experiencing Narrative Worlds. On the Psychological Activities of Reading*. New Haven: Yale University Press, 1993.

Green, M. C. and Brock, T. C., 'The Role of Transportation in the Persuasiveness of Public Narratives', *Journal of Personality and Social Psychology* 79, 5, 2000, pp. 701-721.

Green, M. C., Brock, T. C. and Kaufman, G. F., 'Understanding Media Enjoyment. The Role of Transportation into Narrative Worlds', *Communication Theory* 14, 4, 2004, pp. 311-327.

Green, M. C. and Jenkins, K. M., 'Interactive Narratives. Processes and Outcomes in User-Directed Stories', *Journal of Communication* 64, 3, 2014, pp. 479-500.

Grimshaw, M., Charlton, J. P. and Jagger, R., 'First-Person Shooters. Immersion and Attention', *Journal for Computer Game Culture* 5, 1, 2011, pp. 29-44.

Hayles, N. K., 'Hyper and Deep Attention: The Generational Divide in Cognitive Modes', *Profession* 13, 2007, pp. 187-199.

Ilgner, J., Kuhlmann, R., Eirund, H. and Hering-Bertram, M., 'Interacting in 3D Virtual Worlds with Brain Computer Interfaces', *Proceedings of the 21st International*

Conference on Computer Graphics, Visualization and Computer Vision 2013, 2013, pp. 78-87.

Kuijpers, M. M., Hakemulder, F., Tan, E. S. and Doicaru, M. M., 'Exploring Absorbing Reading Experiences', *Scientific Study of Literature* 4, 1, 2014, pp. 89–122.

Labov, W., *Language in the Inner City*. Philadelphia, PA: University of Pennsylvania Press, 1972.

Lombard, M. and Ditton, T. (1997) 'At the Heart of it All. The Concept of Presence', *Journal of Computer‐ Mediated Communication* 3, 2 [WWW document] URL http://onlinelibrary.wiley.com/doi/10.1111/j.1083-6101.1997.tb00072.x/full (visited 10/06/17).

Murray, J. H., *Hamlet on the Holodeck. The Future of Narrative in Cyberspace*. London: The Free Press, 1997.

Nell, V. *Lost in a Book: The Psychology of Reading for Pleasure*. New Haven, CT: Yale University Press, 1988.

One to One Development Trust (2015) *WALLPAPER* [WWW document] URL http://dreamingmethods.com/wallpaper.

Peplow, D., Trimarco, J., Swann P. and Whiteley, S., *The Discourse of Reading Groups. Integrating Cognitive and Sociocultural Perspectives*. London: Routledge, 2015.

Poels, K., de Kort, Y. and Ijsselsteijn, W., '"It is always a lot of fun!". Exploring Dimensions of Digital Game Experience Using Focus Group Methodology', *Proceedings of the 2007 conference on Future Play*, 14 November 2007, pp. 83-89.

Pope, J. 2010. 'Where Do We Go From Here? Readers' Responses to Interactive Fiction: Narrative Structures, Reading Pleasure and the Impact of Interface Design. *Convergence: The International Journal of Research into New Media Technologies*, 16, 75-94.

Pope. J. 2017. 'Further on Down the Digital Road: Narrative Design and Reading Pleasure in Five New Media Writing Prize narratives', *Convergence: The International Journal of*

Research into New Media Technologies, 23 (4), OnlineFirst, https://doi.org/10.1177/1354856517726603.

Posner, M. I., 'Orienting of Attention', *Quarterly Journal of Experimental Psychology*, 32, 1980, pp. 3-25.

Ryan, M.-L., *Narrative as Virtual Reality. Immersion and Interactivity in Literature and Electronic Media*. Baltimore, MD: Johns Hopkins University Press, 2001.

Ryan, M.-L., *Narrative as Virtual Reality Narrative as Virtual Reality 2: Revisiting Immersion and Interactivity in Literature and Electronic Media*. Baltimore, MD: Johns Hopkins University Press, 2015.

Segal, E. 'Narrative Comprehension and the Role of Deictic Shift Theory', In J. Duchan, G. Bruder and L. Hewitt (eds.), *Deixis in Narrative*. Hillsdale, NJ:

Laurence Erlbaum, 1995, pp. 3-17.

Stockwell, P., *Cognitive Poetics*. London: Routledge, 2002.

Takacs, Z. K., Swart, E. K. and Bus, A. G. 'Benefits and Pitfalls of Multimedia and Interactive Features in Technology-enhanced Storybooks: A Meta-analysis', *Review of Educational Research*, 85, 4, 2015, pp. 698–739.

Thon, J.-N., 'Immersion Revisited: On the Value of a Contested Concept', In O. Leino, H. Wirman and A. Fernandez (eds.), *Extending Experiences: Structure, Analysis and Design of Computer Game Player Experience*, Rovaniemi: Lapland University Press, 2008, pp. 29-43.

van Peer, W., Hakemulder, F. and Zyngier, S., *Scientific Methods for the Humanities*. Amsterdam: John Benjamins, 2012.

Whiteley, S., 'Text World Theory, Real Readers and Emotional Responses to *The Remains of the Day*', *Language and Literature* 20, 1, 2011, pp. 23-41.

Whiteley, S. and Canning, P., 'Reader Response Research in Stylistics,' Special Issue of *Language and Literature*. *Stylistic Approaches to Reader Response Research* 26, 2, 2017, pp. 71–87.

Yantis, S., ‘Control of Visual Attention’, In H. Pashler (Ed.), *Attention*, 1998, pp. 223-256. Hove: Psychology Press.

Biographical notes:

Astrid Ensslin is Professor in Game Studies and Digital Humanities at the University of Alberta (Canada). Her main publications include *Small Screen Fictions* (2017), *Literary Gaming* (2014), *Analyzing Digital Fiction* (2013, co-edited with Alice Bell and Hans Kristian Rustad), *The Language of Gaming* (2011), *Creating Second Lives: Community, Identity and Spatiality as Constructions of the Virtual* (2011), *Canonizing Hypertext: Explorations and Constructions* (2007), and *Language in the Media: Representations, Identities, Ideologies* (2007). She is Principal Investigator of the “Writing New Bodies: Critical Co-design for 21st Century Digital-born Bibliotherapy” project (funded by the Social Sciences and Humanities Research Council of Canada) and Co-Investigator of the “Reading Digital Fiction” project (funded by the UK’s Arts and Humanities Research Council, “AHRC”).

Email: ensslin@ualberta.ca

Alice Bell is Professor of English Language and Literature at Sheffield Hallam University (UK). Her main publications include *The Possible Worlds of Hypertext Fiction* (2010) and *Analyzing Digital Fiction* (2014, co-edited with Astrid Ensslin and Hans Kristian Rustad). She is Principal Investigator of the AHRC-funded “Reading Digital Fiction” project and of the Leverhulme Digital Fiction International Network.

Email: a.bell@shu.ac.uk

R. Lyle Skains researches and teaches Creative Writing and Digital Media at Bangor University (UK), conducting practice-based research into writing, reading/playing, and publishing digital and transmedia narratives. She has previously published articles in *Convergence*, *Digital Creativity*, and *Computers and Composition*, and she has a book on

contemporary authorship forthcoming from Cambridge U.P. She is a Co-Investigator of the AHRC-funded "Reading Digital Fiction" project. She is currently a Senior Lecturer in Writing at Bangor University.

Email: r.l.skains@bangor.ac.uk

Jen Smith is Scholarly Communications Librarian at the University of Sheffield and former postdoctoral researcher for the AHRC Reading Digital Fiction project at Sheffield Hallam University. Her Ph.D. involved a sociologically inspired field study of artefact books in art, craft, text, and publishing; her M.Sc. featured quantitative and qualitative analysis of user evaluation data. She previously worked on PATHS (Personalised Access to Cultural Heritage Spaces), an EU/FP7-funded project to create a new user interface for Europeana, and RDMRose, a JISC-funded project to develop training materials on research data management for librarians.

Email: jennifer.smith@sheffield.ac.uk

Isabelle van der Bom is a Lecturer in the English Department at Chemnitz University of Technology and a postdoctoral researcher for the AHRC Reading Digital Fiction project at Sheffield Hallam University. She has previously published a chapter in the edited volume, *World Building: Discourse in the Mind on Text World Theory* (2016), and co-authored a number of articles on a range of Linguistics topics in the *International Journal of Literary Linguistics*, *Discourse, Context & Media*, *Discourse & Society*, the *Journal of Language and Sexuality* and the *Journal of Politeness Research*.

Email: i.v.bom@shu.ac.uk